Birds
Division of Birds

Vol. IX. APRIL, 1901. No. 4.

The beautiful is as useful as the useful.—*Victor Hugo.*

SMITHSONIAN INSTITUTION
SEP 4

# BIRDS AND NATURE

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EDITED BY WILLIAM KERR HIGLEY.

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March 25, 1901. A. W. MUMFORD.

---

# TO THE READER OF THIS MAGAZINE • • •

Eight volumes of BIRDS AND NATURE were completed with the December, 1900, number. The volumes contained illustrations of Birds, Birds' Eggs, Flowers, Mammals, Fish, Insects, Fruits, Shells and Minerals; and the text contained several valuable articles from the pens of well-known writers and educators. As we have already announced, BIRDS will be made the chief attraction, and at least four bird-plates will appear in each number. It is our purpose to publish a series of illustrations of gems and ornamental stones in Volume X, beginning with the June, 1901, number. The articles will be written by a high authority on the subject.

Among the color illustrations of future numbers the following may be mentioned:

| MAY, 1901. | JUNE, 1901. |
|---|---|
| Surf Scoter. | Brandt's Cormorant. |
| Rusty Blackbird or Grackle. | Great Northern Shrike. |
| Marbled Godwit. | Sanderling. |
| Audubon's Oriole. | Bullock's Oriole. |
| Nautilus Shells. | Agates. |
| Medicinal Plant: Hops. | Medicinal Plant: Cocoa Fruit. |
| Flowers: Mountain Laurel, Trailing Arbutus. | Flowers: Great Mullein, Moth Mullein. |
| American Elk. | Buffalo. |

The preparation of the birds and other animals for photographing in colors will be under the direction of Mr. Frank M. Woodruff, of The Chicago Academy of Sciences. Mr. Woodruff will also assist the Editor in the selection of subjects:

During the publication of the eight volumes of BIRDS AND NATURE the following 376 colored plates have appeared:

241 Birds.
46 Mammals.
28 Flowers.
14 Medicinal Plants.
10 Insects (75 varieties).
10 Landscapes.
7 Minerals and Ores (48 varieties).
7 Fruits and Nuts (16 species).
5 Fishes.
3 Birds' Eggs (49 species).
2 Reptiles (Turtles).
2 Shells (27 species).
1 Polished Wood Sections (6 varieties).
1 Showing Change of Color in Birds' Feathers.

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Those who have the other eight volumes will certainly want this volume. If ordered on or before May 1st, we will send Volume IX for $1.25 when ready. Better still, send us $2.00 for double Vol. IX and X, half morocco, which will be ready Dec. 10. Our special offer of the four double volumes, half morocco, for $8.00, is very attractive. The nine volumes, cloth, at $9.00 will bring us a good many orders.

---

Enclosed please find $3, in payment of BIRDS AND NATURE for two years. I have enjoyed the magazine so much and have found it of great help to me in my work. It now seems impossible to get along without it. MAY STEELE.

Du Bois, Pa., Feb. 23, 1901.

I have the first double volume 1 and 2, and think it could not be made much better. I intend to have all the volumes before I am many weeks older. Your magazine is one of the best that has ever reached my hands. I only wish it was published weekly instead of monthly. LOUIE HARTMANN, JR.

Bainbridge, N. Y., Feb. 19, 1901.

Enclosed find $1.50 for my subscription for the BIRDS AND NATURE. The paper is truly a work of art. MARY C. STOVER.

Van Wert, O., Jan. 27, 1901.

Please send me two sets, four double volumes each, BIRDS AND NATURE, half morocco, as mentioned in March number of BIRDS AND NATURE, for which I enclose money order for $16. CHAS. B. KELSEY.

Hartford, Conn., March 14, 1901.

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JAS. W. FRAZIER.

Bloomington, Ind., March 2, 1901.

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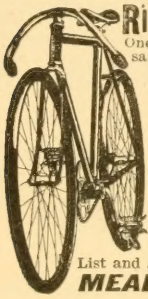

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# BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. IX. APRIL, 1901. No. 4

## APRIL.

No days such honored days as these! While yet
Fair Aphrodite reigned, men seeking wide
For some fair thing which should forever bide
On earth, her beauteous memory to set
In fitting frame that no age could forget,
Her name in lovely April's name did hide,
And leave it there, eternally allied
To all the fairest flowers Spring did beget.
And when fair Aphrodite passed from earth,
Her shrines forgotten and her feasts of mirth,
A holier symbol still in seal and sign,
Sweet April took, of kingdom most divine,
When Christ ascended, in the time of birth
Of spring anemones, in Palestine.

—Helen Hunt Jackson.

---

I come, like a hope to a gloomy breast,
With comforting smiles, and tears
Of sympathy for the earth's unrest;
And news that the summer nears,
For the feet of the young year every day
Patter and patter and patter away.

I thrill the world with a strange delight;
The birds sing out with a will,
And the herb-lorn lea is swift bedight
With cowslip and daffodil;
While the rain for an hour or two every day
Patters and patters and patters away.

—Bernard Malcolm Ramsay, in the Pall Mall Magazine.

# THE CURASSOW.

An interesting race of birds, known as the Curassows, has its range throughout that part of South America, east of the Andes Mountain range and north of Paraguay. All the species are confined to this region except one, which is found in Central America and Mexico. This is the bird of our illustration (Crax globicera).

The Curassows belong to the order of Gallinaceous birds and bear the same relation to South America that the pheasants and grouse bear to the Old World. They are in every respect the most important and the most perfect game birds of the district which they inhabit. In all there are twelve species placed under four genera. As the hind toes of the feet are placed on a level with the others they resemble the pigeon and are unlike many of the other gallinaceous birds.

The Curassows are very large and rather heavy birds and some of them are larger than our turkey. They have short wings and a strong bill. At the base of the upper mandible and on the upper side there is a large tubercle-like excrescence which is of a yellow color and quite hard. Upon the head there is a gracefully arched crest of feathers which is made of curled feathers, the tips of which are white in some of the species. This crest can be lowered or raised at the will of the bird. The plumage of the species illustrated is a beautiful and velvety black, except ne white on the lower portion of the body. It is said that their motions are much more graceful than are those of our common domestic turkey. "They live in small flocks, and are arboreal in their habits, only occasionally descending to the ground, while roosting and building their nests on the branches of trees." The nests are large and made of twigs and willowy branches held in place by the stems of grasses, which are neatly interwoven between them. The nest is lined with down, feathers and leaves.

It is said that they are easily domesticated and that in some parts of South America they may be found in tame flocks around the homes of the planters. One authority states that at about the beginning of the present century a large number of Curassows were taken from Dutch Guiana to Holland, where they became thoroughly domesticated, breeding as readily as any other kind of domestic poultry. Though a tropical bird, it would seem that they might be acclimatized. They would certainly form a valuable addition to the list of our farm fowls, for their flesh is said to be "exceedingly white and delicate."

The female is not as large as the male and is usually reddish in color. Their food consists almost entirely of fruit and insects.

About the middle of the eighteenth century Eleazar Albin wrote "A Natural History of Birds," in which he gives a very interesting account of the Curassow and an excellent illustration of the bird. He says: "I took a pourtray of this bird at Chelmsford in Essex; it was very tame and sociable, eating and drinking with any company. The Cock I had of a man from the West Indies. They are generally brought from Carasow, from whence they take their Name. They are called by the Indians Tecuecholi, Mountain-Bird or American Pheasant."

FROM COL. CHI. ACAD. SCIENCES.

401

CRESTED CURASSOW.

(Crax globicera.)

1/3 Life-size.

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A. W. MUMFORD, CHICAGO.

# SOME NOTABLE NESTS.

The Clymer boys and girls, of Cloverdale, New England, belonged to a Bird Club; they were proposed to membership by their neighbors, the Walkers; in fact, the two families composed the club, and it partook of the nature of a secret society.

All this was before the young people of Cloverdale knew of Clark University, and Dr. Hodges' "Ten to One Clubs," wherein the members pledged themselves to strive by all imaginable means—provided they were also practical—to induce ten song birds to live and sing each year, where only one was found the year before.

It was not necessary for the Cloverdale Club to put up carefully constructed and artistic bird houses, or to hang cotton and the like fine nest-building materials in choicest ornamental shade trees—not at all. The English Sparrow had not found the village in those days; the song birds were there, they knew all the good locations and just where to find the best stuffs for constructing, furnishing and decorating their homes; the work of the club was to find these homes, to study them, with the ways and habits of their occupants, and to record their discoveries in a big book labeled, "Things Not Generally Known."

Many of the statements in this book were as broad and conclusive as scientific dogmas, but the Cloverdale Club did not waste its time searching for hundreds of instances to establish a single truth; one was enough to be worthy of record; then, if some time the big book should be given to the public, and some naturalist or investigator should choose to confirm its statements by patient research, of course he would be welcome so to do. The club had the distinction of discovery, that was enough.

One interesting item recorded was this: "Birds—such as Orioles—who build in conspicuous places, like to decorate the outside of their nests, and in so doing are known to use manufactured materials and patterns." Strange statement, but of course thereby hangs a tale, and here it is.

At the spring house-cleaning time, Mrs. Clymer had the big, bright sitting-room carpet taken out under one of the old colonial elms, at the east of the house, to be cleaned. Mrs. Baltimore Oriole was up in the elm that morning looking for a building spot that should be a bit superior to the old one; she had spent three summers in that tree, was familiar with the ways of the club, and habits of the family; like the birds of Eugene Field's boyhood, "she knew her business when she built the old fire-hang-bird's nest."

No one was near when Mrs. Oriole fixed her eyes on the great red, green and white ingrain carpet, and admired it; what she thought we know not, but when she glanced at the hitching post under the tree, she instantly descended from high, waving branch, to lowly square post, for exactly covering the top of the same was a miniature carpet, a piece just six by six inches which Patrick should have left indoors; not having done so, he laid it on the inviting post for safe-keeping. That bit of wool fabric was very valuable, it exactly filled a jog right by the fireplace, in which, alas! ever after was seen an ugly piece of oil cloth!

All summer long the club girls and boys gazed with wonder at the gay nest in the elm, hanging like a solitary blossom among the leaves; their speculations about it would fill a long chapter; but after the birds were flown far to the south, and the leaves were gone, that nest was finally cut down and told its story: thread by thread, just as pulled from the bit of carpet, had been woven into a decoration for the outer wall of that hanging house, till a rude reproduction of the original tiny rug was under the feet of the birdlings, and over the heads of the boys.

The club held a special exhibition of

that nest, and at Thanksgiving time one of the home-coming guests, who was an enthusiastic kindergartener in the city, persuaded those generous nature students to let her take their treasure to the poor children who seldom saw the commonest kind of a hang-bird's nest, and in that kindergarten it may be seen today.

Another entry in the club book was this: "Birds building on the ground, especially Vesper Sparrows, locate if possible where they have a fine outlook, and give great attention to the arrangement of the front yard."

This was discovered when Emily Clymer took her small brother Jo up in the "side hill pasture" to see the finest mountain view in all the county, and to find wild strawberries; while picking the berries they found what was afterward called the juniper house; this was a Vesper Sparrow's home, roofed by green growing juniper.

Everybody knows that the prophet Elijah could never have sat and wept under a New England juniper tree; no tree is less high or more nearly horizontal than this; in fact, we call it a bush—where it is big—this one was not larger than Emily Clymer's two hands, and growing straight out from descending ground, it formed a flat, green roof to the Sparrow homestead; then, while my lady sat upon her nest, she looked out of her tiny front door, across a gently sloping lawn, upon a whole range of mountains. But most remarkable of all were the ornamental shade trees, for just ten inches from the door, on either side, waved two big brakes, symmetrical in size and shape; they gracefully arched across the entrance, and were to the Sparrow domicile as the giant elms to the big Clymer homestead. A sketch of this beautiful residence was made by a member of the club —for cameras were not common in Cloverdale then—the picture cannot be taken from the club book, but I think we can see it all with our mind's eye.

Here is one of the most astounding statements in that book of many observations: "Some Phoebes are like the Golden Eagle in three ways—first, they build on rocky and inaccessible cliffs, second, they build in the same place for one hundred years; and, third, when the young are big enough to fly, they know how, and just go up without any practicing." All this can be proved to any one who will go in nesting time to a cliff overhanging the river just below Cloverdale, and who will accept the testimony of some of the most reliable and respectable men who have honored that place in the past century.

You must go in a boat and hug the shore; of course you need a member of the club for guide; at an unexpected moment you are told to look over your head, and there, glued to a shelf of rock so small as to be entirely covered by the same, is the nest! No porch, or even doorstep, beyond its wall—an overhanging roof of rock above, a shoreless expanse of water below; now, if some one can keep the boat steady, and you have the nerve to stand at the highest point of the bow, then by reaching over your head you can gently touch some fuzzy bits of life in the nest. Now you know the first and last of the facts recorded are correct: there is the nest on the inaccessible cliff; there are the birds, and if they did not fly up and out into the world the first time they stood on the edge of the nest, would they not be in the dark water below, instead of coming back to the old home for a hundred years?

The evidence of successive occupation for a century is this: The present family of Walkers—father and children—have watched that nest, never finding it empty a summer for twenty years. Old Deacon Walker, grandfather of our club members—who, of course, initiated their father—proved that Phoebes had hatched in the cliff nest during eighty years previous, in this wise: After he had stood guard forty years, as the deacon loved to relate, didn't his Uncle Israel—who had been spending just those two-score years in the South—come home one spring evening, and the very next morning that ancient worthy demanded a boat and a boy to take him under the old Phoebe's nest on the ledge, which he affirmed had never been without tenants during the forty years before he left Cloverdale?

So there are the figures and facts showing how not only the nest, but bird love and bird lore had come down through the

century, and with such an inheritance, no wonder the Walkers are on the best of terms with feathered folk, or that they, with their confidential friends, the Clymers, are still adding to their bird book things not generally known.

Elizabeth Reed Brownell.

## THE BLACKBIRD'S SONG.

The bee is asleep in the heart of the rose,
The lark's nestled soft in the cloud,
The swallow lies snug close under the eaves—
But the blackbird's fluting is loud;
He pipes as no hermit would or should,
Half a mile deep in the heart of the wood,
In the green dark heart of the wood.

The raven's asleep in the thick of the oak,
His head close under his wing;
The lark's come down to his home on the earth—
But the blackbird still will sing,
Making the heart of the dark wood thrill
With the notes that come from his golden bill,
That flow from his golden bill.

—Walter Thornbury.

# A GOLDEN EAGLE.

In January, 1900, I had given me a Golden Eagle. He had been picked up in a stunned condition in the foot-hills, having received a shock from the electric wires, on which he had probably alighted for a moment or struck in his flight. There is an electric power-house in the Sierras opposite Fresno, from which pole lines carry the strong current down to be used for power and light in the valley, and this was by no means the first record of eagles and other large birds being stunned or killed by them.

The person who found him had brought him down with the idea of having him stuffed, but as he showed a good deal of life, I begged to keep him alive, and he was handed over to me. He was evidently a young bird of the previous season, though nearly full grown. From tip to tip of his wings he was over five feet, and his wonderful black talons measured one and one-half to two inches beyond the feathers. His legs were handsomely feathered down to the claws, and his proud head, with its strong beak, large, piercing eyes, and red and yellow-brown feathers, was a thing of beauty. The rest of his body was dark, almost black, with the exception of three or four white diamonds showing on the upper tail feathers.

I kept him in a big box open on one side. When I first brought him home and had put him into the box, a neighbor's poodle came sniffing around for the meat I had brought for the eagle. He was on the back side of the box, and so could not see that there was anything in it, nor did he hear anything, but all at once the scent of the bird must have struck his nostrils, for with a squall of fear he disappeared from the yard and never afterward would venture near the cage.

During the time I kept the eagle, some two months, he never showed any desire to attack me, though his claws would have gone through my hand like a knife, nor did he display any fear of me. He never made any attempt to get out while anyone was in sight of him, nor did I catch him in any such attempt, but sometimes at night I would hear him, and every morning his wings, beak and feathers showed he never gave up the hope of getting free.

I never fed him to the full extent of capacity, but gave him from a pound to a pound and a half of meat daily at noon, which he devoured in a very short time, sticking his claws through the toughest beef and tearing it like ribbons with his beak. It was wonderful to see how clean he could pick a bone with his clumsy-looking great beak. I never knew him to touch any kind of food but raw meat. When anything was handed in to him, no matter how high up, he never accepted it in his bill, but struck at it with a lightning-like movement of his claws, scarcely ever missing it.

One day he snapped in two one of the bars across his cage, pried off another and got out. I was telephoned that my eagle was out, and hurried home to find all the children in the neighborhood blockaded indoors. The eagle was perched on the grape-arbor easily surveying the lay of things. A cat had crawled into the wood-pile and under the door-steps the venerable cock of the yard was congratulating himself on his safety, but feeling rather undignified. I procured a rope and took my first lessons in lassoing. The eagle had been so closely confined that he had not been able to gain the full use of his wings, and so could only run or flutter a few feet from the ground. I finally recaptured him and brought him back. He showed no fear and offered little resistance.

About the middle of March the weather became very hot, and it was really cruel to keep the bird penned up in such close quarters in such weather, so I took him out to the plains and set him free. He could not use his wings much, and it is very doubtful if he escaped the shot-gun or rifle of some predatory small boy, but it was the best I could do for him. He was a beautiful specimen of a bird, and I only wish I could have kept him.

Charles Elmer Jenney.

FROM COL. CHI. ACAD. SCIENCES.

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HARLEQUIN DUCK.
(Histrionicus histrionicus.
½ Life-size.

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# THE HARLEQUIN DUCK.

(*Histrionicus histrionicus*)

The Harlequin Duck is the sole representative of the genus to which it belongs. The generic and the specific names (Histrionicus), which unfortunately the strict rules of scientific naming require in the case of this bird to be the same, are from the Latin word meaning harlequin. This word, meaning a buffoon, is especially appropriate, for the arrangement of the colors on its head, neck and back give the bird a peculiar appearance, especially during the mating season. At this time, too, the drollery of their actions is very noticeable.

Harlequin is not the only name by which this bird is known. In the New England States and northward along the Atlantic coast it is frequently called the "Lord and Lady," because of the white crescents and spots of its plumage and the proud bearing of the male. It is also called the Rock Duck, the Mountain Duck and the Squealer.

Its range covers the northern portion of North America, Europe and Asia. "It is not common wherever found. In many parts of the Old World it is only a rare or occasional visitor; this is the case in Great Britain, France and Germany." In the United States, during the winter, it passes southward into Illinois, Missouri and California. It breeds only in the northern part of its range.

It is a mountain duck and "frequents swiftly running streams, where it delights to sport among the eddies below water falls or in the brawling rapids." It is not only an adept in the art of swimming and diving, but it also flies swiftly and to a great height. During the winter it frequents northern sea coasts and exhibits the characteristics of other sea ducks, and is occasionally found far out at sea. It is known that the Harlequin will lead a solitary life, and it is sometimes observed in pairs or even alone on streams of remote and unfrequented localities.

The sexes vary greatly. While the male, which is the sex of the bird of our illustration, is brightly colored, the female is much more somber. The young resemble the adult female.

The food of the Harlequin consists almost entirely of the parts of aquatic plants and the smaller crustaceans and mollusks. The food is obtained by diving, frequently through several feet of water. Mr. Chapman tells us that the sea ducks in diving to obtain food, will "sometimes descend one hundred and fifty feet or more."

Its nest, though usually placed on the ground, is sometimes built in the hollow of a tree or a hollow stump, though always near a body of water. The nest is usually a simple structure made of the stems of water plants, twigs and grass thickly lined with the downy feathers from the breast of the duck. The eggs are occasionally laid on the grass, and no effort is made to build a nest. The female thoroughly covers the eggs when she leaves the nest.

The number of eggs varies from six to eight, though ten have been recorded. They are of a "yellowish buff or greenish yellow" color.

This duck is considered an excellent food and is much sought for by the natives of those regions which it frequents.

# AN ORCHARD BIRD-WAY.

"A rodless Walton of the brooks,
A bloodless sportsman I;
I hunt for the thoughts that throng the woods,
The dreams that haunt the sky."

—*Samuel Walter Foss.*

An isolated orchard certainly comes very near being an inner sanctuary of bird life. For some reason or other, the gnarled old trees and matted June grass touch either the practical or artistic sense of bird nature very closely, and appeal strongly to many a bird heart, for therein do congregate all sorts and conditions of feathered life. Probably it is an exceptional feeding-ground, for the curled and misshapen leaves testify to the abundance of the hairy caterpillar and leaf-worm supply, which proves such delectable tidbit to the bird palate. When I see the birds feasting upon these unsavory looking morsels, I can but wonder at the unregenerate farmer who so loudly decries the bird as a fruit-destroyer, when a few hours' observation will teach him that to one cherry stolen there are a hundred tree destroyers gobbled up, and a thousand weed seeds devoured. It is Wilson Flagg who so curtly says:

"The fact, not yet understood in America, that the birds which are the most mischievous as consumers of fruit are the most useful as destroyers of insects, is well known by all the farmers of Europe; and while we destroy the birds to save the fruit, and sometimes cut down the fruit trees to starve the birds, the Europeans more wisely plant them for their sustenance and accommodation."

Our orchard is surrounded by a fence of weather-stained chestnut rails, whose punctured surface has been the scene of many a worm tragedy resulting in the survival of the fittest. We enter through a pair of lichen-covered bars, grey-tinted and sobered by age. How far less picturesque is our field and hedgerow when inclosed by that inhuman human invention, a barbed-wire fence, and trim swing gate. To be neat and up to date, is never to be picturesque, and seldom to be artistic. But our quiet entrance into the orchard has caused something of a disturbance among the inhabitants, if no great alarm. Fluttering hastily to a convenient tree top goes a dainty red-eyed vireo, who seems to me to have more of a grey than olive gleam to his shining back. As he alights upon the topmost bough—

"A bird's bright gleam on me he bent,
A bird's glance, fearless, yet discreet,"

but to show that he is in no way seriously alarmed he flings down to us some sweet notes of liquid song. It is Wilson Flagg, I believe, that has dubbed him the Preacher, but to me he seems more correctly termed the Lover, for I can but interpret his accentuated notes into "Sweet Spirit, Sweet—Sweet—Spirit," a continuous cry, as it were, of loving eulogy to the devoted little wife who is so carefully hidden in her pocket nest in a distant thorn tree. But all of this time we understand his clever machinations, as he carefully leads us in an opposite direction by his song allurements. He flits from tree to tree with a naive turn and flutter, keeping upon us all the time, an eye alert and keen, until he deems us at a safe distance enough to be left to our own clumsy device, when, with a quick turn, he wheels backward to the starting-point, and we hear a triumphant praise call to the beloved "Sweet Spirit." Near a corner of the old orchard where there are great bunches of Elder and Sumach, we hear vehemently stitching, a busy little Maryland yellow throat, doing up his summer song work with an energetic "Stitch-a-wiggle, Stitch-a-wiggle, Stitch-a-wiggle, stitch 'em," the "stitch 'em" brought out with such emphatic force that it seems the last satisfactory utterance of a work accomplished. His pert vivacity has been most delightfully illustrated by Ernest Seton-Thompson, in Frank Chapman's "Bird Life," and I am sure the snap-shot caught him on his last accentuated "stitch 'em." Dr. Abbot tells us that these busy

little people usually build their nests in the skunk cabbage plants, indicating that they must have an abnormal odor sense, but perhaps they allow their sense of safety to overcome their sense of smell. However, this pair of yellow-throats have built instead, among some thickly matted Elders, just above the ground.

Another fact that favors our orchard in bird minds, is its close proximity to a thickly foliaged ravine which affords such delightful security to feathered people. It is also a charming background for our sunny orchard, filled in below, as it is, with tall, ghostly stalks of black cohosh gleaming white in the shadows.

Near by, upon a bit of high ground, quivers a group of prim American aspens, the pale green of their bark gleaming against the dark shadows of a hemlock hedge. As we look at them, not a leaf is in motion, when all of a sudden one little leaf begins to gesticulate frantically, throwing itself about with violent wildness, then another leaf catches the enthusiasm of the soft summer air, then another, and another until all of the trees are a mass of gesticulating, seething little serrated atoms, for all the world like a congregation of human beings, vociferating, demonstrating, or contradicting some poor little human leaf that has dared to be moved by some passing thought in advance of his fellow kind. Darting through the quivering foliage comes a gleam of fire, which resolves itself into a scarlet tanager who calls to us, "look-see," demanding our attention to his bright beauty, remembering possibly that his brilliant coloring is but a thing of short duration, for too soon will come winter and plain clothes. Perched upon a fence rail, but somewhat out of place in this shady corner, sits a blatant meadow lark, about whose golden breast is hung a gleaming neck chain and locket of shining black feathers, of which, from the pert poise of his head, we deem him justly proud, and he is at least a conspicuous spot of color against the green of the hillside. He eyes us impertinently as he inconsistently but musically calls to us, "You-can't-see-me, You-can't-see-me," in the face of the most contradictory evidence of his own conspicuousness, varying his song to "Erie-lake-Erie," with every other breath. As a child I used to wonder who taught him the name of the great lake on whose borders he makes his summer home. But to other people, other interpretations, for to Neltje Blanchan he says "Spring-o'-the-year, spring-o'-the-year," and to Frank Chapman his song is a bar of high, trilling notes. Sing on, you wary warbler, for we have not time to search out your carefully hidden nest among the timothy grasses of the distant meadow, for we know that it would be like looking for the pearl in the oyster, so carefully is it concealed among the dried grasses, but which snakes and field mice depredate so effectually. In the distant valley we hear the soft echo of the Italian liquids of the wood thrush's "A-o-le-le, a-oa-o-le." Shy little songster, who so sweetly trills to us long after his feathered kind have tucked their busy little bills away in soft wings. Across the orchard comes the romantic "Coo-coo-coo-coo," sometimes interpreted into "I-thou-thou-thou," of the purple plumaged mourning dove, starting out on a high minor and softly falling to a low contralto. There are no more delightful representatives of romantic bird love, than these birds illustrate. More frequently than in any other species you see the devoted pair going about together, on the telegraph wire, on the tree top, on the wing, always together, undulating their graceful necks with marked devotion. Many a bird lover has criticised Mr. Dove for his remarkable fondness for a lady who is a so decidedly slack housekeeper, and who is satisfied with so shiftless a nest in which to deposit the two white eggs, for the few carelessly thrown together sticks can prove anything but a bed of down to the tender bird babies. However, perhaps these romantic birds consider that "love is enough" as they follow Le Gallienne's refrain of:

**"The bird of life is singing on the bough,**
**His two eternal notes of 'I and Thou'—**
**Oh, hearken well, for soon the song sings through**
**And would we hear it, we must hear it now."**

Alberta A. Field.

# THE CANADA GROUSE.

(*Dendragapus canadensis*)

The Canada Grouse, also called the Spruce Partridge, frequents the evergreen forests and swamps and the shrubby areas of British America east of the Rocky Mountains, and in Alaska it is a resident of the Pacific coast. In its southern flights it seldom passes beyond the latitude of the northern portion of New England and Minnesota.

This bird is an interesting member of the bird family Tetraonidae, which also includes the birds variously called bob-white, quail and partridge, the ptarmigans and the prairie hen. The family includes about two hundred species, about one-half of which belong to the Old World. There are twenty-five distinct species of the subfamily of grouse. These are practically confined to the higher latitudes of the northern hemisphere and are strictly speaking non-migratory. In fact, nearly all the birds of this family are resident throughout the year in the localities where they are found.

They are terrestrial in their habits, and when frightened they usually depend on hiding in places where their dull colors will least attract attention, but they will, occasionally, fly into trees when flushed.

The Canada Grouse, like all the related species, is a bird of rapid flight. The feathers of their small wings are stiff, causing a whirring sound during flight. The male during the mating season gives a great deal of attention to his appearance. He is quite black in general color and more or less barred with white underneath and above with gray or reddish brown. The female is not quite as large as the male, and is not as dark in color. Above the eye of the male there is a small area of bare skin, which is a bright vermilion color.

These gentle and retiring birds mate in the early spring and remain together through the breeding season. Captain Bendire states that he has good reason for believing that the mating may last for more than one season, as he has frequently found a pair, in the depth of winter, when no other individuals of the same species were near. The nest, consisting of loosely arranged blades of grass and a few stalks and twigs, is built by the hen on a slight elevation of ground, usually under the low branches of a spruce tree.

The number of eggs varies greatly. Mr. Ridgway says that they vary in number from nine to sixteen. The eggs also vary greatly in color from a pale, creamy buff through various shades to brownish buff, and are irregularly spotted with a deeper brown, though occasionally they are spotless.

During the spring and summer months the food of the Canada Grouse consists very largely of the berries of plants belonging to the Heath family, such as the blueberry, the huckleberry and the bearberry, as well as the tender buds of the spruce. In the winter it feeds almost entirely on these buds, and the needle-like leaves of the spruce, the fir or the tamarack trees. At times they seem to show a preference for certain trees, and will nearly strip the foliage from them.

As a food for man their flesh is far from satisfactory. It is dark-colored and strongly flavored with the odor of their natural food. However, certain Indian tribes are said to relish them and hunt them extensively.

Mr. Bishop, in "Forest and Stream," relates the following very interesting account of the strutting of the male Canada Grouse while in captivity. He says, "I will describe as nearly as I can his conduct and attitude while strutting: The tail stands almost erect, the wings are slightly raised from the body and a little drooped, the head is still well up, and the feathers of breast and throat are raised

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CANADA GROUSE.
(Dendragapus canadensis.)
½ Life-size.

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and standing out in regular rows, which press the feathers of the nape and hind neck well back, forming a smooth kind of cape on the back of the neck. This smooth cape contrasts beautifully with the ruffled black and white feathers of the throat and fore breast. The red comb over each eye is enlarged until the two nearly meet over the top of the head. This comb the bird is able to enlarge or reduce at will, and while he is strutting the expanded tail is moved from side to side. The two center feathers do not move, but each side expands and contracts alternately with each step the bird walks. The movement of the tail produces a peculiar rustling, like that of silk. This attitude gives him a very dignified and even conceited air. He tries to attract attention in every possible way, by flying from the ground up on a perch, and back to the ground, making all the noise he can in so doing. Then he will thump some hard substance with his bill. I have had him fly up on my shoulder and thump my collar. At this season he is very bold, and will scarcely keep enough out of the way to avoid being stepped on. He will sometimes sit with his breast almost touching the earth, his feathers erect as in strutting, and making peculiar nodding and circular motions of the head from side to side; he will remain in this position two or three minutes at a time. He is a most beautiful bird, and shows by his actions that he is perfectly aware of the fact."

There seems to be a diversity of opinion regarding the method followed by this grouse to produce the drumming sound. Mr. Everett Smith, as quoted by Captain Bendire, says, "The Canada Grouse performs its drumming upon the trunk of a standing tree of rather small size, preferably one that is inclined from the perpendicular, and in the following manner: Commencing near the base of the tree selected, the bird flutters upward with somewhat slow progress, but rapidly beating wings, which produce the drumming sound. Having thus ascended fifteen or twenty feet it glides quietly on the wing to the ground and repeats the maneuver." According to this and other authorities a tree, usually spruce, having a diameter of about six inches and inclining at an angle of about fifteen degrees, is selected. Frequently these trees are used so extensively and for so long a time that the bark on the upper side will be much worn. Other authorities, and among them Indians, who live in the regions frequented by this grouse, claim that the drumming is produced while flying from the branches of a tree to the ground, repeating the operation several times in succession. Another authority describes the drumming of the male as follows, "After strutting back and forth for a few minutes, the male flew straight up, as high as the surrounding trees, about fourteen feet; here he remained stationary an instant, and while on suspended wing did the drumming with the wings, resembling distant thunder, meanwhile dropping down slowly to the spot from where he started, to repeat the same thing over and over again."

The Canada Grouse is easily domesticated and would make an interesting and amiable bird pet, because of their peculiar habits. Seth Mindwell.

# DO PLANTS HAVE INSTINCT.

Instinct has been defined as a spontaneous impulse, especially in the lower animals—that moves them, without reasoning, toward actions that are essential to their existence, preservation and development. Instinct, imbedded in their organic structure, is the guide of animal life as reason is the guide of rational life. Instinct is said to be incapable of development and progress.

It is instinct that guides the wild goose in his long flight to meet the changing requirements of food and nesting. It is instinct that enables the carrier pigeon, though taken hoodwinked and by night to distant points, to wing his way unerringly homeward. Instinct leads the thrifty squirrel to stock his larder with nuts in anticipation of the period that must pass ere nuts are ripe again, and teaches him to destroy the embryo plant by biting out the germ so that his chestnuts will not sprout and thus be spoiled for food. The same wonderful power enables the bee to build her comb upon the strictest mathematical principles so as to obtain the greatest storage capacity and strength of structure with smallest consumption of wax, and then to store it with one of the most perfect and concentrated of foods. These and many other well-known cases of animal instinct will occur to the reader, but the object of this article is to mention a few phenomena of plant life, whereby they make, what we should designate in human beings, an intelligent adjustment to environment or provision for their future life and development.

As autumn approaches, even before Jack Frost strikes the first rude signal for winter quarters for insect and plant, or the wintry blasts compel the trees to furl sail and scud under bare poles, the forest trees begin to prepare for unfavorable conditions by forming and securely tucking away the bud that is next year to develop into leaf and flower. Before the leaf drops off, a substantial layer of cork is made to close up the pores through which the sap had so freely flowed during the growing season.

My older readers know, of course, that the green color of the leaf is due to the numerous corpuscles of chlorophyll which fill the cells. This same chlorophyll has an important mission to fulfill. These little green bodies are the only real food-making machines in nature. Upon the product of these tiny mills all animate nature depends for food. Their motive power is light, and their raw material the inorganic fluids absorbed by the roots from the soil, and their product is sugars and starches. It will be seen that chlorophyll is one of the most precious, as well as one of the rarest of substances, for while there may appear a great quantity it is superficial, never entering deeply into the substance of the plant.

The trees, by a sort of instinct, shall we say, withdraw their cohorts of green-liveried workers from the front as autumn approaches and deck themselves in the more gaudy but less wholesome colors of declining life. It is after the chlorophyll is withdrawn that the layer of cork is formed. The sturdy oak usually holds his brown leaves until they are whipped off by the wind.

The plants have been using light as a motive power for ages, while man, with his much-vaunted reason, is just beginning to utilize the kindred force, electricity, in arts and sciences. Man makes light draw a few pictures in sombre black and white, while nature flings broadcast landscape and life scenes in varied tints and shades.

In the process of photosynthesis much more energy is received than is necessary to run the machinery, so the plant, with commendable frugality, uses it in laying on what botanists call warming-up colors. If you will notice the peach twigs the next

time you take a walk, you will see that the more tender shoots and the buds are decked in rich reds and browns. That this is not for mere ornament may be practically demonstrated by wrapping the bulbs of two similar thermometers, the one with a green leaf, the other with a brown or red leaf, say of begonia or beet. Then put the two in the sunlight and you will soon find a difference of from six to ten degrees in favor of the warming-up color. Speaking of buds, have you examined the horse chestnut bud? It is prepared for the winter in the most substantial manner. The future leaf is first wrapped in a quantity of finest silky wool, then a number of tough light green cases are put on, and this is followed by compact brown scales neatly overlapping, with a complete coating of wax, so that the interior is effectively protected from the cold and moisture. The use of the warming-up colors is quite common with plants.

In the far north the same plant that requires the whole long growing season to mature its seed, will crowd the whole process into a few weeks. It will suspend growth and all other processes, or run them on short time and devote itself almost entirely to producing seed, and the seed itself will have much thicker shell.

I was interested last autumn in the pathetic struggle of a humble little Chenopodium album that had started life late and under unfavorable circumstances. It came up in September under the north piazza near the beaten foot path; close up to the building. I was first attracted by the fact that, though it was not over a foot high, it had bloomed and was making seed at a desperate rate, while its sisters earlier in the season reached several feet in height before blooming. But, alas! for the vanity of the poor little creature, the cold weather during the Christmas holidays came on, and the steam being shut off, the side of the building grew cold and my struggling little friend was frozen, and soon its lifeless remains were the sport and derision of the rude January winds. I pitied the poor little vagabond despite the bad record of her family. Indeed plants, like people, must suffer sometimes because of an evil ancestry. In this case I was touched by the pathos of the situation, and really hoped the pertinacious little wretch might proudly scatter her well-matured seed upon the hard-beaten path as an inspiration to the many boys that passed daily, grumbling because of the hardness of their lot. But the only moral I can now draw is the foolishness of delaying in the right start.

Sometimes the supply of light-energy is so great that the little chlorophyll machines cannot use it in their legitimate work, nor does the plant use it in preparing the warming-up color. Then the disc-shaped corpuscles turn their edges instead of their flat surfaces to the light, or sometimes move deeper down into the leaf. In some cases the leaf itself turns edgewise instead of broadside to the sun.

There are many plants so constituted that they cannot live from year to year in our northern climate, and they must make some provision for preserving their species, and right cunningly do they do this. At a certain period of its growth the potato, for example, puts its starch-making machinery to work on full time, and hurries the starch down below the surface of the ground, and stores it up in what we call a tuber. These tubers have stored in them a number of embryo potato plants, whose lack-luster eyes we see peeping out on all sides. When the time for growth comes, the young plant starts with a reserve-food supply sufficient to keep it growing for some time. We have all noticed, no doubt, how large a plant will grow from a potato, even in a comparatively dark cellar. We must not think that tuber-bearing vines and nut-producing trees are actuated entirely by philanthropic motives. Each nut is the young tree sent forth with his patrimony strapped to his back, ready to make a good start in the world as soon as the favorable time comes.

There are many devices for spending the winter that limits of time and space will prevent me writing about. Many of them more curious than the simple examples I have cited.

Plants are themselves generally unable to move from their fixed positions, so if they are to become prominent in the world they must send out their children—and many and ingenious are their devices for accomplishing this end. Most of my

readers are familiar with the parachutes of the silk weed, dandelion and various members of the Compositae family. How they sail through the air. A walk through the autumn forests will make one the unconscious, perhaps unwilling, carrier of numerous Spanish needles, stick tights, burrs and seeds of various plants who have taught their children to steal rides in all sorts of provoking ways. I imagine the wicked old mother laughs as her ugly baby clings to your clothing, sure of a safe ride to a more favorable place for growing. Many plants achieve the same end in a more pleasant way. They produce fruits and berries so luscious that some bird or animal will carry it some distance for the sake of the pulp. Man himself, philanthropist as he is, when he finds that a plant has produced a luscious fruit or palatable seed, will help the distribution and growth, and bring his superior intelligence to the assistance of the plant's slow instinct to improve its product. A book might be written upon the methods of seed dissemination. In fact, there is a very interesting book upon the subject.

We will just notice briefly the marvelous adaptation of plants to their environment. In the dry plains of Arizona grows a peculiar thick-leaved, stunted, cactus-like plant, suited to withstand the drouth. In the forests of Central South America a great vine climbs to the tops of the tallest trees and there flaunts its gay colors to the breeze. In Damara Land, southwest tropical Africa, upon a small upland section, and nowhere else in the world, grows the marvelous Welwitschea mirabilis, with no real leaves, but with its two cotyledons, persistent and growing to enormous length, living a century and acquiring a great trunk, the flower-stalk growing up from the bare trunk while the two great leaves, if I may so designate them, whip about in the breezes for a century without change, except as they fray out at the ends. These three so dissimilar plants all had a common, not so remote, ancestor, but have grown so unlike in their effort to adapt themselves to their environment, that no casual observer would suspect they were akin.

There is so much to say about the wonderful intelligence displayed by plants in their various activities, that a volume could not do the subject justice. We started with the question, Do plants have instinct? We end with the question, Have they? Rowland Watts.

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Still winter holds the frozen ground and fast the streams with ice are bound,
There's many a dreary week to come before the flowers bloom;
Though everything were lost in snow yet Nature's heart beats warm below
And Spring will build her palace gay on hoary Winter's tomb.

—George Gee.

FROM COL. CHI. ACAD. SCIENCES.

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DOVEKIE.
(Alle alle.)
⅔ Life-size.

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# THE DOVEKIE.

(*Alle alle.*)

This little bird, often called the Sea Dove, belongs to the family of auks (Alcidæ). The range of the Dovekie is quite limited. While the marble murrelet, a related bird, is confined to the northern Pacific coast of North America, this little bird frequents only the "coast and islands of the north Atlantic and eastern Arctic Oceans; in North America south in winter to New Jersey." It breeds only in the northern part of its range. It has been observed as far west as the state of Michigan, but its appearance there was, without doubt, accidental, for it prefers the wild sea coast, where the storm and waves bring to it an abundant supply of food.

It is said to be a rare visitor on the coasts of the British Islands and it has been reported as common as far to the northward as Spitzbergen. In Greenland, where it is commonly found a close companion of the black-billed auk, the native Greenlanders call the Dovekie the Ice Bird, as they consider it a harbinger of ice.

Though the wings of the Dovekie are small in proport on to the size of its body it flies well and rapidly. One writer states that it will move its wings almost as rapidly as will a hummingbird. It is an expert diver and while swimming or resting on the water it will frequently dip its bill into the water. On the land it is much more graceful and walks better than nearly all the other members of the family of auks.

It feeds chiefly on small fish, crustacea and mollusks and will become very fat during a prolonged stormy season when the waves wash up an abundant supply of crabs and fish.

The Dovekie builds a simple nest usually in the crevices of rocky cliffs bordering the sea coast. It lays one or two bluish white eggs which are about the size of the pigeon's.

Mr. Saunders in speaking of the habits of the Dovekie says: "On the approach of a vessel this bird has a peculiar way of splashing along the surface of the water, as if unable to fly, and then diving through the crest of an advancing wave; it swims rather deep and very much by the stern."

The Dovekie is sometimes called a little auk to distinguish it from the larger species of the family. The flightless great auk, which at one time was common along the north Atlantic coast, belongs to this family. No living representative of the great auk has been reported since the year 1842. Unable to protect itself by flight it was ruthlessly exterminated by the zeal of hunters and fishermen who sought it for food, for its feathers and for the oil that could be extracted from its flesh.

As flying ever westward Night's shadows swiftly glide,
The sunrise at the dawning illumes the countryside.
The stars in quick succession in ether melt away,
Until the brightest planet is lost in glowing day.

—George Gee.

# THE SONG SPARROW'S APPEAL.

Naturalists tell us that of all creatures below man, the largest animal brain in proportion to the size of the body is found in horses and song-birds. Whatever sense beyond instinct the little creature of whom we write may have had, something, at least, told it that it could obtain help at human hands.

A little sparrow the past season entered the kitchen of one of our country homes, and perched upon the window-sill in evident distress. Its feathers were ruffled, and its head ever and anon turned curiously around and up, as if looking at something out of the house and above the window.

In and out it continued to hop, without intermission, regardless of all offers of food, until the shutters were closed at twilight, and various were the surmises as to the cause of its strange conduct.

Through the course of the following day the same scene was enacted, without any clue appearing as to the cause of its distress.

At length, on the third morning, the mute petition for aid still continuing, one of the family, bethinking herself of the bird's curious upturning of the head, caught a new idea from it. Perhaps she might have a nest in the ivy that encircled the window, and something might be amiss with its little household.

Going to the second story and looking down, the cause of the trouble was at once manifest. A thick limb of the ivy had become loosened by the wind, and fallen directly across the petitioner's nest. It was too heavy for the bird to remove, and offered an insuperable difficulty in the way of her getting in to feed her young—now almost lifeless.

The branch was quickly removed, when the mother-bird, pausing only for a brief inspection of her brood, was on the wing in search of food. Her mate soon joined her, and both were busy as quick wings, worked by hearty good will, could make them.

Once only did the mother pause in her work—as if desirous to give expression to her gratitude, she reappeared upon the window-seat, and poured forth a sweet and touching song, as of thankfulness to her benefactors.

She returned three successive seasons, to be noticed and fed at the same spot where her acquaintance and familiarity with man first commenced.

We will add another similar incident, which is also absolutely true.

The correctness is vouched for by Mr. George Babbitt, late captain on Gen. Gresham's staff, of which he himself was a witness.

During the fierce cannonading in one of the battles of the Civil War, a small bird came and perched upon the shoulder of an artilleryman—the man designated, we believe, as "No. 1," whose duty it is to force down the charge after the ammunition is put in the gun. The piece was a "Napoleon," which makes a very loud report, and the exact scene of this occurrence was at a place called "Nicka-jack." The bird perched itself upon this man's shoulder and could not be driven from its position by the violent motions of the gunner. When the piece was discharged, the poor little thing would run its beak and head up under the man's hair at the back of the neck, and when the report died away would resume its place upon his shoulder. Captain Babbitt took the bird in his hand, but when released it immediately resumed its place on the shoulder of the smoke-begrimed gunner. The singular and touching scene was witnessed by a large number of officers and men. It may be a subject of curious inquiry, what instinct led this bird to thus place itself. Possibly, frightened at the violent commotion caused by the battle, and not knowing how to escape or where to go, some instinct led it to throw itself upon the gunner as a protector. But, whatever the cause, the incident was a most beautiful and pleasing one to all who witnessed it.

George Bancroft Griffith.

# THE WITCH IN THE CREAM.

## A TRUE STORY.

The old stone farm-house in which my grandmother lived had beneath it what I thought a very interesting cellar. The floor was plastered and whitewashed like the walls, to ensure the place from rats and other intruders, as well as to keep it cool. From the walls, flat stones projected, serving as shelves on which the butter and milk were kept. For years the milk had had a shelf to itself near the window.

One summer morning, while Grandma and I were sitting on the porch waiting for breakfast, the little colored servant came to us with wide-open eyes, saying: "La, Missy, jes look at dis milk-pan!" We looked, and saw, to our disgust, that the inside of the pan was covered with sand and grime, while the milk, which usually was coated with rich, thick cream, was thin and poor. "Why, Janey," said Grandma, "you didn't put milk away in a pan like that, did you?" "La, no, Missy," said Janey, "nobody wouldn't nebber put milk away in a dirty pan." "This is very strange," said Grandma. "You will have to throw the milk away, Janey, and be especially careful to have the pan clean this evening." "Yes'm," said Janey, "I will."

The following morning, however, the milk had to be thrown away again, as the pan was in a worse condition than on the preceding morning. "I don't understand it," said Grandma. "It can't be rats, nor mice, for there is no way for them to come in." "They couldn't climb into a tin pan eight inches high, at any rate," I said, "and if they jumped in they would drown." Janey shook her head knowingly and said, "It's witches, Missy, dat's jes what it is." A light board was placed over the milk that evening, but we found that the marauder pushed it off in the night. We felt that we must come to Janey's conclusion about the witches, if the mystery were not solved soon.

In the afternoon of the third day of these experiences we were sitting on the back porch with our sewing, both of us half asleep, when chancing to look up I saw a rat go scudding across the yard. Straight to the cellar window he went, and, approaching one corner, thrust his nose under the sash. He gave a mighty tug, pushed one paw under, and soon, by pushing and pulling with nose and with paws, he crept through the window. From my position on the porch I could see all that was happening in the cellar. He jumped to the milk shelf, turned around, raised himself on his forepaws, and clasped the edge of the milk pan with his hind ones.

He then threw his tail into the pan, whisked it rapidly over the milk, coating it with cream, and licked it. This he repeated until he had a full meal, or at least until he had skimmed all the cream.

He started homeward then, and I was so much amazed that I didn't attempt to stop him. On the following morning he was caught in the steel trap set just inside the window for him.

Elizabeth Roberts Burton.

# THE BEAVER.

The genus of Beavers (Castor) is apparently represented by a single living species. By some authorities the American form is considered a distinct species and is given the technical name Castor canadensis, while the European form is called Castor fiber. In external characteristics the two resemble each other very closely, and it is in the study of the structure of the skeleton that the differences appear. However, though there is this diversity of opinion, it is sufficient for the reader to look upon the two forms as merely geographical races of the same species, and that the Beaver is a native of the greater part of the northern hemisphere. Though its home covered this extensive area, it has disappeared from the larger number of localities that it once frequented. Speaking of its range as a whole, it may now be considered rare except in certain isolated localities. This extermination is due to the advance of civilization upon its natural haunts, and the commercial zeal that has stimulated the hunter to greater efforts to effect its capture. Within recent years the Beaver was common in some of the Gulf States. In 1876 it was reported as abundant in Virginia. It is evident from an examination of the numerous writings regarding its distribution that the Beaver formerly existed in great numbers not only in the Atlantic States, but also to the westward as far as the Pacific coast.

The Beaver is a member of that large order of gnawing mammals called the Rodentia, from the Latin word meaning to gnaw. In this order are classed all those animals that have those peculiar long incisor teeth which are constantly renewed by growth from the roots and as constantly worn to a chisel edge, at the outer end, by gnawing. Such animals are squirrels, the gophers, the mice, the rats, the muskrats, the porcupines, the hares and the rabbits.

The habits of the Beaver are very interesting. Several years are required before its growth is fully attained, and it will increase in size after the teeth are fully mature. "Two-year-old Beavers generally weigh about thirty-five to forty pounds, while very old ones occasionally attain a weight of upwards of sixty. Morgan records the capture of one which weighed sixty-three pounds. The increase in the size of the skull seems to continue nearly through life; in old age the skull not only acquires larger dimensions, but the weight is relatively greater in consequence of the increased thickness and density of the bones. The ridges for the attachment of muscles also become more strongly developed in old age."

The general color of the back of the Beaver is a reddish brown. The shade varies both with the seasons and with the geographical location. Those found farther to the northward are usually darker. Albinos, either pure white, nearly white or with white blotches, have been observed.

"The fur consists of an exceedingly thick, flaky, woolly coat of silky softness and a thin, long outer coat composed of strong, stiff, shining hair, short on the head and rear part of the back and over two inches long on the rest of the body." The tail, which is rounded at the base, much flattened and very broad, bears horny, dark-colored scales.

The fore legs are short and the feet are unwebbed. The hind legs are much stronger, the feet are fully webbed and they, alone, are used, with the aid of the tail, to propel the Beaver through the water. In the water it is graceful in its motions, but on the land, like nearly all animals that are fitted for a partially aquatic life, it is clumsy and awkward and its motions are neither rapid nor uniform.

Usually it is only in those districts that are remote from the habitations of man

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BEAVER.
(Castor fiber.)
⅓ Life-size.

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that the Beaver lives in colonies, consisting of several families, and builds its "lodges." Nearer civilization it lives in burrows or tunnels. In the building of their homes, as well as in the storing of a supply of food, the female is the most active and is the practical builder, while the male assists.

Brehm writes interestingly regarding the Beaver. He says: "After mature deliberation the animals select a stream or pool, the banks of which afford them ample provender and seem specially adapted for the construction of their 'lodges.' Those which live singly dwell in simple subterranean burrows, after the manner of otters; societies, which generally consist of families, as a rule construct houses and, if there should be a necessity for it, dams, in order to hold back the water and preserve it at a uniform height. Some of these dams are from four hundred and fifty to six hundred feet long, from six to nine feet high, from twelve to eighteen feet thick at the base and from three to six feet at the top. They consist of logs varying in size from the thickness of an arm to that of a thigh and from three to six feet long. One end of the log or stake is thrust in the ground, the other stands upright in the water; the logs are fastened together by means of thin twigs and made tight with reeds, mud and earth, in such a way that one side presents a nearly vertical, firm wall to the stream, while the other side is sloped. From the ponds rising above the dams, canals are constructed to facilitate the carrying or floating of the necessary construction materials and food. Beavers do not forsake a settlement they have founded unless the direst necessity compels them to do so. Beavers' lodges, the origin of which dates very far back, are often found in lonely woods."

The Beaver usually feeds upon the bark of the younger branches of trees and shrubs and upon their leaves. It will also strip the older branches, in a very skillful manner, and eat the inner tender portion of the bark. During the fall and early winter months they work constantly in preparing and storing, in the neighborhood of their lodges, the winter's supply of food. "Each cabin has its own magazine, proportioned to the number of its inhabitants, who have all a common right to the store and never pillage their neighbors."

The American Indians look upon the Beaver with great respect. They believe that it is possessed of a degree of intelligence second only to that of man. Some Indians even assert that it possesses an immortal soul. Its sagacity is certainly very strong and it will easily adapt itself to changed environments. Unlike the other rodents, it seems to reason before acting and will build its habitations in the form that the surrounding conditions demand for the construction of the most durable home.

The Beaver, especially when young, is quite easily domesticated. Various writers speak of finding tame Beavers in Indian villages, where they seemed to be perfectly at home and contented. They were allowed full liberty. "They seemed to feel quite comfortable in the society of the Indian women and children; they grew restless in their absence and showed much pleasure on their return."

The young, which number from two to three, are born blind, but are covered with fur. They usually obtain their sight in from eight to ten days, and are then led to the water by the mother.

Early in the nineteenth century Dr. George Shaw wrote as follows regarding the habits of the Beaver: "They collect in September their provisions of bark and wood; after which they enjoy the fruits of their labors, and taste the sweets of domestic happiness. Knowing and loving one another from habit, from the pleasures and fatigues of a common labor, each couple join not by chance, nor by the pressing necessities of nature, but unite from choice and from taste. They pass together the autumn and the winter. Perfectly satisfied with each other, they never separate. At ease in their cabins, they go not out but upon agreeable or useful excursions, to bring in supplies of fresh bark, which they prefer to what is too dry or too much moistened with water."

# PAU-PUK-KEEWIS AND THE BEAVERS.

Over rock and over river,
Through bush, and brake, and forest,
Ran the cunning Pau-Puk-Keewis;
Like an antelope he bounded,
Till he came unto a streamlet
In the middle of the forest,
To a streamlet still and tranquil,
That had overflowed its margin,
To a dam made by the beavers,
To a pond of quiet water,
Where knee-deep the trees were standing,
Where the water-lilies floated,
Where the rushes waved and whispered.
On the dam stood Pau-Puk-Keewis,
On the dam of trunks and branches,
Through whose chinks the water spouted,
O'er whose summit flowed the streamlet.
From the bottom rose the beaver,
Looked with two great eyes of wonder,
Eyes that seemed to ask a question,
At the stranger, Pau-Puk-Keewis.
On the dam stook Pau-Puk-Keewis,
O'er his ankles flowed the streamlet,
Flowed the bright and silvery water,
And he spake unto the beaver,
With a smile he spake in this wise:
"O my friend Ahmeek, the beaver,
Cool and pleasant is the water;
Let me dive into the water,
Let me rest there in your lodges;
Change me, too, into a beaver!"
Cautiously replied the beaver,
With reserve he thus made answer:
"Let me first consult the others,
Let me ask the other beavers."
Down he sank into the water,
Heavily sank he, as a stone sinks,
Down among the leaves and branches,
Brown and matted at the bottom,
On the dam stood Pau-Puk-Keewis,
O'er his ankles flowed the streamlet,
Spouted through the chinks below him
Dashed upon the stones beneath him

Spread serene and calm before him,
And the sunshine and the shadows
Fell in flecks and gleams upon him,
Fell in little shining patches,
Through the waving, rustling branches.
From the bottom rose the beavers,
Silently above the surface
Rose one head and then another,
Till the pond seemed full of beavers,
Full of black and shining faces.
To the beavers Pau-Puk-Keewis
Spake entreating, said in this wise:
'Very pleasant is your dwelling,
O my friends! and safe from danger;
Can you not with all your cunning,
All your wisdom and contrivance,
Change me, too, into a beaver?"
"Yes!" replied Ahmeek, the beaver,
He the king of all the beavers,
"Let yourself slide down among us,
Down into the tranquil water."
Down into the pond among them
Silently sank Pau-Puk-Keewis;
Black became his shirt of deer-skin,
Black his moccasins and leggins,
In a broad black tail behind him
Spread his fox-tails and his fringes;
He was changed into a beaver.

—Henry Wadsworth Longfellow, "The Song of Hiawatha."

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What rosy pearls, bright-zoned or striped!
What freckled surface, iris-dyed!
Fluted and grooved, with iv'ry lips,
Spotted like panthers, peacock-eyed!

Look closer, as the angels can,
And you will see the fairy work—
The ruby specks, the azure veins,
That in the tiniest hollow lurk.

—Walter Thornbury, "Shells."

# SNAILS OF THE OCEAN.

Many of my readers have doubtless spent some of the vacation months at the sea shore and have wandered over the beach at low tide picking up shells and other objects left by the receding ocean. They have also, I am sure, peered into the little pools of water left on the beach and have watched with interest the captives imprisoned therein, hermit crabs, fiddler crabs, sea anemones, sea worms and snail shells. It is with the latter that the present article will deal.

The stretch of beach which is uncovered twice a day by the receding of the water is called "between tides," and is inhabited by a host of animate creatures, chief among which are the mollusks. The marine snails outnumber all of those which we discussed in the last article, and their shells are far more beautiful, those found in the tropics having the most gaudy colors imaginable. The animals are formed on the same plan as those of the fresh-water snails, although each family has some peculiarity not shared by its relatives. All live in the water and breathe air through that medium by means of gills, similar to the second class of fresh water snails mentioned in the last number. They are found in all parts of the world, those of the tropics, however, being the most brilliantly colored. While the majority of species live either between tides or near low water, there are not a few which live in the abysses of the ocean, and have been dredged from the bottom of the sea at a depth of two thousand, seven hundred and forty fathoms, or, to put it more plainly, over three miles. The average depth at which mollusks are found in any number is about one thousand fathoms. The variability of marine snails is so great that we shall be able to call attention to but a limited number of typical forms.

Among the best known of the marine snails are the Tritons, a family of mollusks living in tropical seas. Their shells are generally large and highly-colored and variously ornamented with short spines and knobs. One species, the Triton tritonis, is among the largest of mollusks, measuring eighteen inches in length. One of the smaller Tritons is pictured on the plate. Another shell familiar to those who have visited Florida is the Fasciolaria or banded snail, which attains a length of three inches and is very prettily banded and dashed with color. A near relative of this species is the giant banded shell (Fasciolaria gigantea), which is the largest of all marine snails, growing to a length of nearly two feet. This species is found plentifully on the southern Atlantic coast of the United States, being particularly abundant about the coral reefs of the Florida Keys.

A genus of mollusks with light horn colored shells, and inhabiting the cold waters of the Arctic seas, is the Buccinum, or whelk. In various parts of Great Britain it is known as "buckie" and "mutlog." The Buccinum delights to burrow in the sand, like the moon shells (Natica), and frequently nothing but the end of the siphon can be seen, the latter protruding from the sand to enable the water to enter the animal to furnish the necessary oxygen. The whelk is used economically, both for food and bait. One ingenious method of catching them is to fasten a dead fish of good size in a wire basket and to allow it to rest on the bottom for a short time; when taken up it is covered with large, fat whelks. This fishery in Great Britain is fully as valuable as our oyster fishery, the annual income from this industry reaching to thousands of pounds sterling. The animal is also one of the principal baits used in cod fishing. A related genus, the neptune shells (Neptunea), is also eaten by the poorer people and makes a good codfish bait. The two kinds of whelk (Buccinum and Neptunea), are termed, the first the white whelk and the second the red or almond whelk, probably on account of the colors of the two shells. In the Shetland Islands the red whelk is used as a lamp, being suspended by strings from a nail, the mouth placed uppermost and filled with oil.

The basket shells or dog-whelks are among the most numerous in individuals

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## MARINE SHELLS.

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Cypraea pantherina (Red Sea)
Cassis flammea (Bahamas)
Conus marmoreus (Polynesia)
Buccinum undatum (U. S.)
Fasciolaria distans (U. S.)
Tritonium olearium (Naples)
Oliva irisans (Amboina)
Voluta musica (West Indies)
Ianthina communis (Atlantic Ocean)
Chiton squamosus (Jamaica)
Lottia gigantea (California)
Nassa glans (Amboina)

of all the marine snail shells, the common black whelk (Nassa obsoleta) being the most common of all the mollusks. The writer has seen a mud flat at low water literally paved with the shells of this snail, there being millions of the little creatures crawling about. The shells of this family are frequently very handsome, being latticed by the crossing of lateral and longitudinal lines. They are mostly of small size, scarcely exceeding an inch in length, many of them being much under these dimensions. The animal is very rapid in movement and leaves a distinct track in the mud, which will frequently end at a little pellet of mud, which, upon examination, will disclose the little animal nicely concealed beneath.

The Nassas of France are very destructive to the oyster beds of that nation, an adult "borer" being able to perforate the shell of a large oyster in a single night. So numerous are these pests that a single acre has yielded over a thousand individuals. As a result of these depredations the French oystermen carry on a relentless war against the Nassa, destroying thousands of animals annually. With all this persecution the mollusk still exists and even increases in numbers. The dead shells of this genus are a favorite home for the hermit crabs of small size, and it is to be suspected sometimes that other than dead shells are appropriated. We fear that a sort of piracy is resorted to by the hermit crab, resulting in a kind of "walk-the-plank" end for the mollusk, before the new tenant takes possession of the "home."

Of the many varieties of tropical shells, few exceed the Volutes, or bat shells, in beauty or variety of coloration. They are found in most parts of the world, although strangely enough none are now living in the seas of Europe, but they are most abundant and more highly colored in the tropics and subtropics. The animal is carnivorous, and the long, fang-shaped teeth are certainly suggestive of predaceous habits. The shells are variously colored, some being mottled, some with zigzag or lightning-like markings, while others have spirally arranged dots and lines. One species (Voluta musica, figured on the plate), has received its name from a more or less fanciful resemblance of the surface of the shell to a musical staff, the spiral lines being grouped in sets of four or five and the dots being arranged as notes. In some specimens this resemblance is quite close. The smooth and polished shell of some volutes is due to the fact that the greater portion is covered by a reflected part of the large foot.

On the sandy shores of subtropical beaches certain graceful and polished animals bury themselves from sight in the sand. These are the olive shells (Oliva) whose bright colors and highly polished surfaces rival even the gaudy Volute in beauty. The foot may be described as plough-shaped and is admirably adapted for digging rapidly in the sand, so that the shell may be hidden from sight on the approach of enemies. The long siphon is thrust up through the canal in the anterior part of the shell and its end protrudes above the sand. The high polish of the surface is due to the shell being enveloped in the voluminous foot; hence it has no epidermis. The aperture is so narrow that it is difficult to understand how the animal gets in and out. The olives are very numerous in individuals; when one is found hundreds are sure to reward a patient search.

Probably no more distinct family of mollusks exists than the Conidae, the family of cones, their beautifully decorated shells and the large number of species making them a favorite with collectors. The shell is in the form of an inverted cone, gracefully rounded, the aperture being but a narrow slit extending nearly the whole length of the shell. The colors of the cones are always very brilliant, although when they are alive the shell is not brilliantly polished as the olives, on account of the presence of an epidermis. About three hundred species are known, living principally in tropical seas. They love to conceal themselves in holes in the rocks and among the branches of corals. The animal is predaceous, boring into the shells of other mollusks and extracting the juices from the bodies. The teeth of Conus are hollow and very sharp and have a barb on the end. A poison gland is said to be present in this genus and bites from the animal are very painful, although not

dangerous, the large Conus marmoreus being able to inflict a severe wound. The cone is quite pugnacious and will immediately bite the hand when picked up, a veritable reptile of the ocean.

The ne plus ultra of mollusks to the collector is without doubt the genus Cypraea, comprising the cowry shells. So eagerly have they been sought by wealthy collectors that the price of rarities has gone up to an astonishing degree, some specimens being sold at several hundred dollars each. The shell is highly polished, owing to the fact that two lobes of the voluminous mantle are turned back over the shell and meet in the middle of the back. The foot is very large and spreading, the mantle beset with curious little tentacular-like organs and the eyes are placed on small swellings near the base of the long, cylindrical tentacles. The color-patterns of the shell vary to a wonderful degree. The young shell has a thin epidermis, a sharp lip to the aperture and a more or less prominent spire, the rolled over and toothed lip and polished surface not being acquired until fully adult. No more beautiful sight can be imagined than one of these gorgeous animals, as seen through the clear water, crawling over the sandy bottom or on the branch of some coral.

Several of the cowries have a curious economic value. Thus, Cypraea aurantia, the orange cowry, was used as an insignia of royalty by the chiefs of the Friendly Islands, and for a long time the only specimens obtainable were those which had been bored and used. The money cowry (Cypraea moneta) has been used as money by the natives of Western Africa, and many tons of this small shell were annually imported to England to be used in barter by the African traders. The shell is of a yellowish or whitish color, does not exceed an inch in length, and is very common in the Pacific and Indian Oceans. It is still used as a medium of barter in parts of Africa, although other things have pretty generally taken its place.

Cameos were at one time quite in the fashion, both as ornaments for the person in the way of brooches, and as bric-a-brac about the room. These shell-cameos are made from the genus Cassis, the helmet shells. These are well adapted for this purpose, as the shell is made up of several differently colored layers, making a bas relief figure not only possible but very effective. The black helmet (Cassis madagascariensis) is one of the best for this purpose, the figure being carved from the white, outer layer of shell, which stands out very clearly against the black background of the second layer. When a cameo is desired simply as a brooch or for any other form of personal adornment, a piece of the shell is cut out and shaped into the required form and size—oval, square or other shape—and cemented to a block of wood. The figure is then traced on the shell with a pencil and finally carefully worked out with sharp, pointed steel instruments, of delicate size and form. The same process is resorted to in working out a bas relief on the entire shell, only the latter is placed in a vice or other object to hold it firmly. The home of this industry is Genoa and Rome, Italy, although some are produced in France; these latter, however, are of a poorer quality. Several thousand people are employed in this trade. Many beautiful examples of this work were exhibited at the World's Columbian Exposition, in Chicago, in 1893.

The cameo shells are among the largest of sea snails, several of them measuring eight or ten inches in length and weighing several pounds. They are found only in tropical and subtropical seas, living in comparatively shallow waters on a sandy bottom. They are voracious eaters, living principally on bivalve mollusks.

One of the most abundant of mollusks is the violet sea snail (Ianthinia communis), which spends its life floating in the waters of the Atlantic Ocean. The shell is very delicate, resembling in form some of the land snails, and has but two colors, both shades of violet, a deep color on the under side (which, by the way, is always turned upward when the animal is floating in the water), and a lighter shade on the upper side. So fragile is the shell that it seems as if a breath would break it. The most interesting fact in connection with this mollusk is the wonderful float or "raft" which is secreted by the foot, and to the under side of which the

eggs are attached. The latter are not all in the same condition. Nearest to the animal they are more or less fresh; those in the middle of the float contain embryos and fully formed young, while those on the outer end are empty, the young having escaped into the water. The genus is gregarious and may be found in almost countless numbers. After a severe storm they are sometimes cast upon the beaches in vast numbers, where they soon die under the fierce rays of the sun.

We have thus far been dealing with snails whose shells were formed in a spiral coil. Quite a number of mollusks are not protected by such a shell, its place being taken by a flat, shield-like disk, or several distinct plates placed side by side. The most familiar of the first is the limpet or Patella, which is a depressed, conical, oval disk, looking not unlike a miniature shield. They live on rocks, to which they cling with great tenacity. The animal seems to have a pretty clear idea of local geography, for it invariably returns to the same place after its excursions for food and the rock in some localities has been hollowed out to a considerable depth by the continuous dwelling thereon of the limpet. The large foot is very strong and it is almost impossible to dislodge the shell from the rock when the animal becomes alarmed and is aware that danger is near. While grazing along the sides of a rock covered with fine seaweed, it will leave a track like a worm and will clean off quite an area in a very short space of time.

Another species is the key-hole limpet (Fissurella), distinguished by having a slit or foramen in the apex of the shell. The shells of Fissurella are generally rougher than those of Patella, and as a rule they live in warmer seas. In the limpet we find a departure from the general form of both animal and shell, both being bilaterally symmetrical, that is, having both sides alike. In the mollusks which have been presented thus far, the body has been twisted in the form of a spiral, making one side different from the other and causing the organs of one side to become atrophied. In the limpets the organs are paired, as they are supposed to have been in the ancestors of the living mollusks.

The most peculiar of all the mollusks, so peculiar, indeed, that they constitute a separate order (Polyplacophora) are the Chitons, or coat-of-mail shells. The shell is made up of eight separate pieces or plates, each locking with the other, the whole supported by and buried in a coriaceous mantle which forms a margin all the way around. This must not be confounded with the true mantle of the animal, for it is only a part of the shell. It is beset with bristles, spines or hairs, which add much to the peculiar appearance of this mollusk.

The Chitons live for the most part on rocks at low water and are said to be nocturnal in habit, feeding only at night. Their movements are slow and they appear to be very sluggish in all their actions. When detached and taken from their rocky homes they have the provoking (to the collector) habit of rolling up and are sometimes very difficult to straighten out again. There are about two hundred and fifty living species, found in all parts of the world.

In the foregoing pages we have called attention to a few types of marine snails, and what has been written has hardly more than touched upon this vast field. There are thousands of different species even more interesting than those which have been mentioned. There are the beautiful ear shells, or Abalones, the little periwinkle, so largely used as an article of food in Europe, besides a host of others too numerous to mention. The brief notes and the figures on the plate will convince the reader, it is hoped, that these inhabitants of the deep are not only beautiful and worthy of our attention and study, but are also of much practical and economical use to man.

Frank Collins Baker.

# THE LEMON.

In 1636 an English report on the affairs of the navy gravely remarked that "the use of lemon is a precious medicine and well tried. Take two or three spoonfuls each morning and fast after it two hours." The value of the fruit for certain disorders of the system seems to have received an early recognition. This was especially true with regard to scurvy, which in earlier days caused widespread mortality among seafaring men. Hawkins, in 1593, made the statement that more than ten thousand men had succumbed to the malady within the limits of his naval experience. The Crusaders under Louis IX. were severely attacked by scurvy, owing to their abstinence from fresh meat during Lent, and the history of the disease shows that it is occasioned by a lack of fresh meat and fruits. The efficacy of lemon juice was recognized by Drake, Davy, Cavendish, Dampier and many others years ago, and time has but added to the value of the fruit, while it has made it accessible to everyone. While Pomona is generally credited with having devoted her entire attention to the cultivation of the apple, it is stated on authority of an old Greek myth, that she gave considerable thought to the development of the Lemon and the orange. It appears that Pomona inclined not her ear to the supplications of her many admirers until Vertumnus, discerning her vulnerable point, presented the fair gardener with a grafting, which, under her skillful cultivation, developed into a lemon tree, and, as a reward, the favor of the wood-nymph was bestowed upon the youth.

Whether or not such was the origin of the Lemon, the fact remains that the fruit is most useful and the tree exceedingly attractive. Originally a native of Asia, it has become widely distributed in Europe, Africa and America, and although far more susceptible to injury from frosts than the orange, the trees are successfully cultivated under many conditions. Doubtless the best results in this country have been obtained in California. Thousands of acres around San Diego are planted with lemon trees while large districts in the Ojai Valley, Ventura, Santa Barbara, Pomona and Los Angeles counties are devoted to its cultivation. The tree is remarkable for beauty, and while it seldom attains large proportions, its pale green leaves, loosely-hanging branches, showy and fragrant flowers, together with the fruit that is found in all stages of development, produce a pleasing and highly ornamental effect. While the best crop of Lemons is generally gathered between December and April, the fruit should be picked every month for ten months of the year, in order to retain the best results. As a rule, the trees yield from one hundred and twenty-five to one hundred and forty boxes of the fruit to the acre, about the sixth year, but this number is increased to four hundred boxes when the groves reach an age of ten years.

The varieties of Lemons are distinguished chiefly by their size and form, and may be roughly classified as egg-shaped with blunt nipples and oblong lemons with large nipples. The sweet lemon and thin-rind Poncine and Naples belong to the firstclass, while the second includes such forms as the imperial, the Gaëta and the wax. The principal varieties grown in California are the Lisbon, Eureka and the Villa-Franca. Of these, the Eureka originated in California, while the Villa-Franca was imported from Europe. Besides the grateful quality of the juice, the expressed oil of the rind is used in the arts and has an intense odor of lemon, and the Pundits of Benares, quote a Sanskrit work, written about 1354, in which the oil is described as a valuable medicine. The acid pulp of the Lemon, after rasping off the rind, is pressed for citric acid, while the ottos of the Lemon, orange and bergamot, the preparation of which forms the chief industry of Sicily, are leading ingredients in the preparation of "Lisbon Water" and "Eau de Portugal."

—Charles S. Raddin.

PRESENTED BY LOUIS KUNZE.



LEMON.
(Citrus limonum.)

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# TWO WRENS.

The house wren is one of Nature's illuminated successes. It has been said that there is no second spring, yet to-day (July 20th) this bird is in the full glory of spring-time melody. He sings from the top of a telegraph pole, the song caught up and repeated by some country cousin in the grove, a musical argument carried on all day long and left at night in the same unsettled state in which morning found it. Whether they are discussing the relative merit of their respective claims, a town residence or a country seat, I am unable to decide; it is certain, however, that the concessions of neither party infringe upon domestic dignity.

Their speech is a revelation of supreme content, a liquid, flexible measure with ripples and cascades bubbling through and over, a dash of pure color amid July's neutral tinted emotions.

The day may be dark and threatening, the sun concealed in gloomy banks of cloud, rain falling, or thick mists obscuring the valley; each and all are powerless to dampen his ardor or to effect his extreme optimism. He clings to his creed with persistent closeness, asserting valiantly the ecstasy of finding one's self alive and emphasizing the statement by a perfect wave of melodious argument.

There are hours when he sings with such force that his whole little body catches the key-note and natural rhythm; the melody becomes compounded of his very substance, body of his body and soul of his soul. It is an inundation of musical notes, cascadic, cataclysmic, the tide of song rising till it drowns his personality; he is no longer a bird but an animated song.

My little neighbor is a pattern of husbandly devotion, a lover-husband over whom coming events are already casting tender shadows before, the special event in this instance being located in a crevice beneath the eaves of the house.

Wren babies had not left the first nest when Jenny Wren's husband was hard at work upon a second house, which was ready for occupancy before the first family were self-supporting. This was an admirable arrangement in the way of time-saving, as eggs are often laid in the second nest before the first is vacated.

Though the new house lacked the freshness of coloring and the picturesqueness of the swing of a nest in the sunshine, Jenny Wren made no complaint of being cooped up in the darkness, and as to her husband, he was quite as well pleased with the glamor and wonder of its art as if it had been wound with blossoms and sprinkled with star-dust. A bird with different tastes might have urged that it was only a little hole in the house-jet, yet everything in life depends upon the point of view from which you regard it. Judged from the wren standpoint, it was considered admirably adapted to the family needs, nor could the most critical observer fail to see here a literal illustration of that familiar truth: Happiness is from within.

Standing upon a ladder I counted eight eggs as my eyes became gradually accustomed to the partial darkness within the nest; the dark, vinaceous spots laid on so thickly as to conceal or obliterate the original color, thus helping to hide them more securely. In the long brooding days, when Jenny's little answering heart is preoccupied and silent, the hours are sometimes long and lonely to her mate. At these times he has been known to devote his spare moments to building a nest simply for his own pleasure. Many instances of this remarkable habit are recorded of the English wren, the explanation offered being that the odd nests are

for the purpose of deceiving the parasitical cuckoo.

There is also a supposition that the bird's active nature finds relief in work, being urged on by the increasing lonesomeness. This wren-trait reaches a climax in the marsh wrens, with whom the building habit becomes a passion.

Nor is it restricted to the wren family, many instances being recorded where other species have beguiled the waiting days by an imitative housekeeping.

The house phoebe has been known to build a second nest while its mate was brooding. To all appearances this was an instance of over-developed domestic tastes. Nor did the experiment end with the completion of the duplicate nest upon which the male bird sat regularly for several hours daily.

Wrens do not take kindly to double houses, their warlike nature seeming to revolt against living friendly with near neighbors. A pair of wrens that was well established in an unoccupied martin house made it very uncomfortable for the later arrivals. While the martins were abroad after material for the nest the wrens sallied forth in an utterly vindictive spirit and scratched out all their neighbors had constructed. After singing a triumphant song with much parade they wisely retired to their own domicile to be on the defensive.

Wiser wrens, with an instinctive knowledge that an ounce of prevention is worth a pound of cure, are known to have the forethought when the box in which they build contains two compartments, to fill up one of them, thus avoiding the risk of troublesome neighbors. Wrens have been known to nest in a human skull. Others with less questionable taste, have gone to housekeeping in an old boot, a watering pot, a coat sleeve; in gourds and baskets, jars and water pipes, while another pair made a nest in the lower part of a stone vase in the garden. There was a hole for drainage in the bottom of the vase, and through this hole they found, beneath some shavings, a circular space just suited for a nest. The vase was not filled with plants until the domestic affairs of the wren family were happily concluded.

The delicate swaying hammock of the oriole is sometimes used for a second nesting.

There was bitter disappointment in wren circles earlier in the season when, with the presumption of inexperience, the pump was filled regularly with coarse twigs, which were promptly dislodged at nightfall. Undiscouraged at this defeat, the morning hours were utilized for rebuilding with a persistency well worthy a more intelligent effort; they worked and sang, sang and worked, until a cigar box was nailed to a tree for their special accommodation. This was nearly full of twigs when they decided that the building-site was ineligible, a decision hastened by the fact that just at this opportune time a glass fruit can was left upon the piazza shelf. No sooner was this glass house seen than its possibilities were realized and plans were quickly made for a kind of crystal palace experiment. Under other circumstances this might have been a dangerous precedent, as certain unneighborly conduct toward their little brothers of the air had at various times fairly invited the throwing of stones. The can was half full of tiny fagots, and Jenny was thinking of settling upon the mattress of wood fibre when the thrifty housewife turned them adrift summarily, well aware that this kind of housekeeping, within easy range of neighboring cats, would not be successful. Before such supreme content, who could have the heart to undeceive them? And yet, the can was turned upside down before they could be made to understand the situation. Like Thoreau, they did not wish to practice self-denial unless it was quite necessary!

After the failure of this crystal scheme, it was a difficult matter for Jenny to make up her mind as to a further preference, but when she really decided it was with such entire good faith as left no doubt in her lover's mind as to her judgment. This was more flattering as it was his own choice, their last year's home thoroughly remodeled, to which he had repeatedly called her attention, vainly. So the hole in the house jet at least answered the question, "Where are the birds in last year's nests?" for the wrens moved in regularly, the tenor having a perch upon a projecting bracket where Jenny joined

him, a regular little termagant, scolding with all her might whenever the kittens looked that way.

Marsh wrens, small brown birds, with barred wings and tail, breed in or about the swamps and marshes of Lake Champlain.

They are intensely interesting from their habit of constructing several nests but one of which is utilized for housekeeping. After the real nest is made and the first egg laid, the male stays closely at home busying itself with building several nests, which are to all appearances entirely superfluous. In locating these he does not go beyond the immediate neighborhood of the true nest.

Some have thought that these sham nests are used as hiding places for the male, a Lilliputian watch tower or guard house, from which close watch is kept over the home property. Whether Mrs. Marsh Wren really needs such close watching, being more inclined to flirt than the ordinary feathered spouse, or because she is a better wife, so infinitely precious that she must be guarded from every side, is, as yet, an unsolved question. "Love holds the key to all unknown," and though there is little to admire in a deportment made fine by compulsory measures, no doubt both parties understand the situation, which is quite enough for practical purposes. These nests, conspicuous from their size and exposed position, are securely attached to the upright swaying reeds, some of which penetrate their substance. They are lined with soft grasses and have an entrance at one side, often nearer the bottom than the top. Mr. Burroughs, who has found the marsh wren's nest surrounded by half a dozen make-believes, says the gushing, ecstatic nature of the bird expresses itself in this way. It is simply so full of life and joy and of parental instinct that it gives vent to itself in constructing sham nests; the generous-hearted creature being willing to build and support more homes than can be furnished or utilized.

Entering the Lake Shore drive at St. Albans Bay, where dense tangles border the swamp beyond, you are sure to hear a song that is unmistakably wrennish. You have glimpses also of a small brown bird bubbling over with a nervous energy that betrays itself in every note he utters. Wait quietly and he approaches, but go one step in his direction and he recedes to the swamp where human foot may not follow.

Push your boat up the creek, the only avenue leading to his abode, that tantalizing song leading on meanwhile like the Pied Piper of Hamelin, though unlike the latter there is no disillusioning at the end. Red-winged blackbirds take wing as you enter the twilight of soft green and amber shade and the far-off music of their jangle-bells becomes less musical, the males striving "to recommend themselves by music, like some awkward youth who serenades his mistress with a jewsharp," and using the air or the alder tops as a parade ground upon which to exhibit their musical evolutions. And yet you are witness to many a voluntary bit of sentiment that will increase your interest in this scarlet epauletted regiment, descendants of the dusky tribe that anchored long ago in this peaceful haven, going out and coming in with the tide until the legend of their coming is as vague and shadowy and misty as that of the golden-fleece voyageurs—the Argonauts. They ebbed and flowed with the stream; came at the proper time and season without knowing why; anchored and launched their ebony ships when it was time for sailing.

Here and there along this waterway the branches clasp hands above the creek, forming an arch of green within which vines sufficiently elegant to warrant exclusiveness cling in unaffected grace to the alders, without inquiring or caring as to the pedigree of their support. It is sufficient for them that the support is there.

A whole half mile along the stream and trees and bushes disappear, leaving a dense mass of reeds, the marsh wren's "ain countrie," out of which he is never at his best and to which he gives you no welcome.

Birds, like persons, have wonderful powers of concentration upon one topic, woe be to you if that topic happens to be yourself!

Every denizen of the swamp regards you with suspicion, watching each move-

ment as closely as if you were a dangerous character traveling under an alias, and could not be trusted to sail upon this ruddy ocean in which their lordships have anchored their private yachts. Push your boat far in among the reeds and cattails, into the sea of shadows over which no sluggish current sends a ripple, and certain globular nests in the tangled reeds reward your search. Push your fingers within these nests and in one only, here and there, will you find from five to ten dark eggs, a rich reward for all your trouble.

Meanwhile the "neighbors, and the marsh wren generally has numbers of them, have doubtless been charming you with their bubbling, gurgling song, always half the colony singing at once, or, one bird rising above the reeds gives the order, as it were, and the whole colony joins in the chorus. The song is quite beyond their control; they seem filled to overflowing with an inexhaustible supply of music, which trickles down the reeds, like gathered-up drops of water charged with music.

"Sometimes, like a mine of melody, it explodes within them and lifts them from the dark recesses of the flags into the air above." Nelly Hart Woodworth.

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## WHEN SPRING COMES.

Again the birds will weave their nests,
And come and go on airy wing;
And one will nurse her little guests
And one will watch and sweetly sing.

The bushes small and towering trees
Their leaves of living green will don,
And, swaying in the restless breeze,
Will laugh because old Winter's gone.

—George Gee.

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# CUBEBS.

(*Piper cubeba* L.)

Aromatics, as cubebs, cinnamons and nutmegs, are usually put into crude poor wines to give them more oily spirits.—Floyer, "The Humors."

The cubeb-yielding plant is not unlike the pepper plant and belongs to the same family (Piperaceae). The two resemble each other in general habits in the form of inflorescence and in the fruiting.

Cubebs were known to Arabian physicians as early as the ninth century, who employed them as a diuretic in kidney troubles. It was also known at that time that Java was the home of the plant. At one time it was believed that the Carpesium of ancient writers was cubebs, but this is now generally disbelieved. Edrisi states that cubeb found its way to Aden about 1153. During the twelfth and thirteenth centuries it was employed medicinally in Spain. Originally it was doubtless employed as a spice, similar to pepper. Mariano Sanudo (1306) classed it among the rare and costly spices. Hildegard referred to the soothing properties of cubeb. In the thirteenth century cubeb is mentioned among the import articles of London. About the same time it found its way into other European countries, notably Germany. At the beginning of the nineteenth century cubeb disappeared almost entirely from medical practice. About 1820 English physicians of Java again began to employ it quite extensively.

As in the case of black pepper, the fruit is collected before maturity and dried. The fruit is about the size of the pepper, but has a stalk-like prolongation which distinguishes it. The pericarp becomes much shriveled and wrinkled on drying.

Cubebs are cultivated in special plantations or with coffee for which they provide shade by spreading from the trees which serve as their support. Their cultivation is said to be easy.

Cubebs have a pungent, bitter taste and a characteristic aromatic odor. It cannot readily be confounded with any of the other more common spices. Its use as a spice is almost wholly discontinued. Its use in medicine is also waning, since it evidently has only slight medicinal properties. It is used in nasal and other catarrhal affections. Cubeb cigarettes are used in the treatment of nasal catarrh. It has a marked influence upon the kidneys, causing irritation and increased activity, and as already indicated it is therefore a diurectic. It is, however, harmful, rather than beneficial, in acute inflammatory conditions of these organs.

Description of Plate—A, twig with staminate flowers; B, fruit-bearing twig; 1, upper portion of staminate inflorescence; 2, staminate flower; 3, fruit; 4, 5, 6, 7, ovary; 8, 9, seed.

Albert Schneider.

# A TREE-TOP TOWN.

Before the cradled violets awake beneath the grass,
Or any but the crocuses and catkins have come back,
Always 'tis then the loveliest thing of all things comes to pass,—
A twit-twit-twitter on the mild spring breeze,
A twit-twit-twitter in the leafing trees,
Through which small sky-blue wings flash out a sky-blue track—
For blue-birds, first adventurous house-builders of the year,
Are at their old, wise tricks again of settling far and near.

Not long, 'tis when the hyacinths and tulips bloom in rows,
And lilies-of-the-valley start to whitening on their stems,
And woodsy things are opening fast to make a new out'-doors,
Then robin-redbreast on a sunny day
Comes taking life his usual charming way,
With a blithe and merry Che-che-chem-chem-chems!
While yet dry leaves and building twigs are left upon the ground
"I thought I'd come to the old place and take a look around."

Then later, when the grasses curl, a-tilt in taller growth,
And nooks for snuggeries are made by grape and ivy-vines,
When lilacs stand in purple, and the plum-trees blossom forth,
Comes here a lilting, gay, and gaudy troop,
Tits, thrushes, bobolinks, blue-jays with noisy whoop,
Kingbirds, wild tumblers in the air, drunk with ethereal wines;
Then cardinals, and indigoes, and finches find the place,
And so the town-site in the trees grows populous apace.

One waiting for the apple-blooms is he who's always late,
The oriole: his building-site none e'er disputes with him.
Though last to come he has full leave to settle, with his mate,
And hang his hammock up to rock and swing,
To flout the town on breezy, orange wing
From where his house sways airily adown a pendant limb.
And now the high, green tree-top town, which welcomes ev'ry comer,
Has settled to the business of singing out the summer.

—Austin Arnold McCausland.

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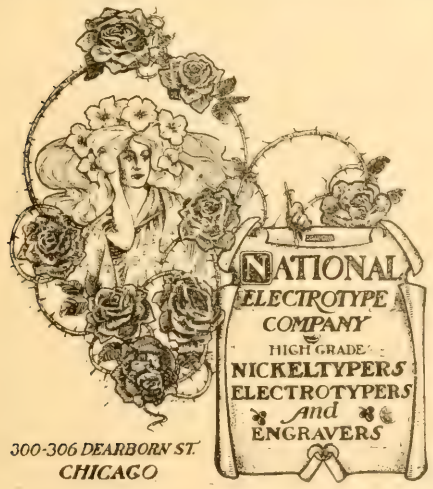


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393 Owl Parrot.
394 Gray Parrot.
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397 Black Bear.
398 Pond and Riv[illegible]lls.
399 Fruit: Orange.
400 Medicinal Plant: [illegible]er.

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**APRIL.**

401 Crested Carrasaw.
402 Harlequin Duck.
403 Canada Grouse.
404 Dovekie.
405 Beaver.
406 Marine Shells.
407 Fruit: Lemon.
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409 Audubon's Oriole.
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416 Medicinal Plant: Hops.

**JUNE, 1901.**

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418 Sanderling.
419 Great Northern Shrike.
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